

REMARKS

Applicants thank the Examiner for the thorough review of the application.

Claim 21-23 have been cancelled, claims 3, 34 and 36 have been amended. New claims 102-104 have been added. Claims 3, 34, 36 and 102-104 are now pending in the application.

Claims 3 and 34 have been amended to be drawn to a plant cell. Support for the amendment is found for example at page 19, lines 20-27, of Applicants' specification.

Claim 3 has been amended to incorporate the features of claims 21-23.

Claim 3 has also been amended to recite the feature of inhibiting functional activity of the endogenous trehalose-6-phosphate phosphatase (TPP) gene. Support for the amendment is found for example in claim 34 and at page 19, lines 6-7, of Applicants' specification.

Claim 3 recites "an antisense gene for TPP" instead of "an antisense gene for TPS" recited in claim 23. This corrects a typographical error, which is apparent from claim 21 and 22, which recite "TPP". Support for the amendment is also found for example at page 52, Example 10, of Applicants' specification.

In claim 34, "prevent" has been amended to "inhibit" to clarify the claims and for consistency with the other claims.

Claim 36 has been amended to recite features recited in claim 34.

Support for new claims 102-104 is found in claim 3, 34 and 36 and at page 52, Examples 9 and 10, of Applicants' specification.

No new matter has been added. Entry of the amendments is respectfully requested.

Claim Objections

The objections are mooted by amendment of the claims. The claims now recite the full names of the enzymes.

Claim Rejections – 35 USC § 112

Claims 3, 21-23, 34 and 36 stand rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement.

The Examiner alleges that the claims contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The Examiner also alleges that the specification only provides guidance for the decrease of TPP activity in plant cells transformed with a vector comprising the full-length antisense gene for TPP of the native plant species.

Applicants respectfully disagree. However, in order to expedite the prosecution of the application, claims 3, 34 and 36 have been amended. New claims 102-104 are also presented.

The claims are now drawn to methods for the inhibition of carbon flow in the glycolytic direction in a plant cell and to vectors for use in a plant cell. The claims are also drawn to antisense genes or fragments, which upon expression are able to inhibit functional activity of the endogenous trehalose-6-phosphate phosphatase (TPP) gene in a plant cell.

Applicants respectfully submit that the claims are enabled over their entire scope.

Based on the teachings of Applicants' specification, one skilled in the art would know how to prepare the vectors recited in the claims. Guidance to prepare such vectors is for example provided at page 52-53, Examples 9 and 10, of Applicants' specification. A person skilled in the art using the teachings of Applicants' specification would also know how to transform a plant cell with such vectors. Moreover, Applicants' specification teaches how to test for the inhibition of the functional activity of the endogenous trehalose-6-phosphate phosphatase (TPP) gene. For example, an assay for trehalose-6-phosphate phosphatase (TPP) is disclosed at page 37, lines 14-28, of Applicant's specification.

Accordingly, it is respectfully submitted that the guidance provided in Applicants' specification is commensurate with the breath of the claims, and that based on Applicants'

specification, one skilled in the art would be able to make and use the claimed invention without undue experimentation.

Applicants note that claims 34 and 36 did not recite "an antisense-TPP sequence" as stated by the Examiner at page 4, last paragraph, of the Office Action of August 9, 2006. However, in order to expedite examination of the instant application, the recitation of "nucleotide sequence" has been deleted from claim 36.

It is therefore respectfully submitted that the claims comply with the enablement requirement of 35 U.S.C. § 112 and that the rejection be withdrawn.

Claims 3, 21-23, 34 and 36 stand rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

The Examiner alleges that the claims contain subject matter which was not described in the specification in such a way as to reasonable convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

The Examiner further alleges that the specification only provides guidance for the decrease of TPP activity in plant cells transformed with a vector comprising the full-length antisense gene for TPP of the native plant species.

Applicants respectfully disagree. However, in order to expedite the prosecution of the application, claims 3, 34 and 36 have been amended and new claims 102-104 are presented.

The claims are now drawn to methods for the inhibition of carbon flow in the glycolytic direction in a plant cell and to vectors for use in a plant cell. The claims are also drawn to antisense genes or fragments, which upon expression are able to inhibit functional activity of the endogenous trehalose-6-phosphate phosphatase (TPP) gene in a plant cell.

Applicants respectfully submit that the subject matter of the claims as now pending is sufficiently described.

For example, Applicants respectfully submit that Applicants' specification provides guidance for the cloning of a representative number of trehalose-6-phosphate phosphatase (TPP) genes, for example at page 50, Example 4, for a tobacco TPP gene, at page 51, Example 5, for a bipartite TPS/TPP gene from sunflower, and at page 51, Example 7, for TPP from monocot species. In addition, Applicants specification provides guidance for vectors comprising antisense genes of TPP and antisense fragments of TPP coding regions, and their use in the claimed methods or in claimed plants. Such guidance can be found for example at page 19, lines 5-11, and at page 52, Examples 9 and 10, of Applicants' specification.

This shows possession of a representative number of species of the claimed genus at the time of filing, and that the claimed methods, vectors and plants are adequately described.

Accordingly, Applicants respectfully submits that Applicants' specification provides sufficient guidance for the subject matter of the amended claims, and reasonably conveys to a person of ordinary skill in the art that the inventors, at the time the application was filed, had possession of the invention.

It is therefore respectfully submitted that the claims comply with the written description requirement of 35 U.S.C. § 112 and that the rejection be withdrawn.

Claims 3 and 21 stand rejected under 35 U.S.C. 112, second paragraph.

The features of claims 21-23 have been incorporated into claim 3.

Accordingly, it is respectfully submitted that claim 3 complies with 35 U.S.C. 112, second paragraph, and that the rejection should be withdrawn.

Claim Rejections – 35 USC § 102

Claims 3, 21-22, 34 and 36 stand rejected under 35 U.S.C. 102(b) as being anticipated by Londesborough et al (U.S. Patent 5,422,254).

Applicants note that claim 23 was deemed free of the prior art in the Office Action mailed on August 9, 2006 given the failure of the prior art to teach or reasonably suggest the transformation of a cell with a cloning vector comprising the antisense gene of “TPS”.

Claim 3, which now incorporates the features of claim 23, has been amended to recite “TPP” instead of “TPS”. Applicants respectfully submit that the prior art also fails to teach or reasonably suggest the transformation of a cell with a cloning vector comprising the antisense of TPP, as recited in claim 3. Accordingly, Applicants respectfully submit that claim 3 should also be deemed free of the prior art.

The Examiner alleges that Londesborough et al teach a crop plant transformed with a cloning vector comprising a yeast TPS gene, wherein the TPS inherently comprises at least one nucleotide that would be in antisense orientation to the TPP gene. The Examiner further alleges that the increase in TPS expression resulting in trehalose-6-phosphate accumulation inherently results in feedback inhibition of TPP.

Applicants respectfully disagree.

Londesborough discloses two isolated genes coding for the short and long chains of yeast trehalose synthase (Londesborough, column 5, lines 13-25). Londesborough also discloses that these genes can be used to transform an organism to produce more trehalose synthase resulting in higher trehalose contents (Londesborough, column 5, lines 13-25). However, Londesborough is silent about any antisense DNA sequence. Londesborough is also silent about the inhibition of the functional activity of an endogenous gene.

The Examiner also alleges that Londesborough teaches the evaluation of a fragment of the TSS1 gene that leads to a decrease in TPP activity. However, Applicants failed to find such teachings in Londesborough and respectfully request clarification.

Londesborough refers to a loss of activity of TPP, but this loss of activity was observed in *in-vitro* assays in the presence of inhibitors of TPP protein activity, such as NEM (Example 8, column 24, lines 32-40) or DTNB (Example 8, column 25, lines 50-54).

Accordingly, Applicants respectfully submits that Londesborough does not teach or suggest a claimed vector, or the use of such vector to decrease TPP activity. Consequently, it is respectfully submitted that claims 34 and 36 are also novel over Londesborough.

It is therefore submitted that the claims comply with 35 U.S.C. 102(b), and that the rejection be withdrawn.

In view of the above, it is respectfully submitted that all objections and rejections have been addressed and that the application is now in condition for allowance.

A Credit Card Payment Form is enclosed for the two-months Extension of time fee under to 37 C.F.R. § 136(a). However, the Commissioner is also hereby authorized to charge any additional fees, which may be required to maintain the pendency of the above application, to Deposit Account No. 50-1744 in the name of Syngenta Biotechnology, Inc.

If any additional information is needed or if, in the opinion of the Examiner, a telephone conference would expedite the prosecution of this subject application, the Examiner is invited to call the undersigned at (919) 765-5117.

Respectfully submitted,



Edouard G. Lebel, Ph.D.
Agent for Applicants
Registration No. 43,742
Telephone: 919-765-5117

Syngenta Biotechnology, Inc.
3054 Cornwallis Road
Research Triangle Park, NC 27709-2257

Date: January 9, 2007